National Unit Specification: general information

UNIT Civil Engineering Project (SCQF level 6)

CODE F3JH 12

SUMMARY

This Unit is suitable for candidates who have limited knowledge of Civil Engineering who wish to work in the field as technician, technologist or other construction professional. The Unit will develop the candidate's ability to apply knowledge, skills, effective self study, research, report writing and presentation gained through study, to the production of a Civil Engineering project.

OUTCOMES

1 Plan a Civil Engineering Project based on a prepared brief.
2 Develop and implement a proposed solution.
3 Evaluate the completed project.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

CREDIT VALUE

1 credit at Higher level (6 SCQF credit points at SCQF level 6*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: TL

Publication date: April 2008

Source: Scottish Qualifications Authority

Version: 01

National Unit Specification: general information (cont)

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CORE SKILLS

There is no automatic certification of Core Skills or Core Skill components in this Unit. Opportunities for developing aspects of Core Skills are highlighted in *Guidance on Learning and Teaching Approaches.*

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Plan Civil Engineering Project based on a prepared brief.

Performance Criteria

(a) Identify sources of information to be used to complete the project.
(b) Identify the tasks required to complete the project.
(c) Prepare a time chart of the tasks needed to be completed in order to finish the project.

OUTCOME 2

Develop and implement a proposed solution.

Performance Criteria

(a) Correctly identify appropriate and practical engineering solutions.
(b) Communicate with the project supervisor regularly to allow monitoring of progress.
(c) Prepare details of and analyse the proposed solution.
(d) Produce interim reports and drawings for evaluation by the project supervisor.
(e) Prepare a written report on the finished project.

OUTCOME 3

Evaluate the finished project.

Performance Criteria

(a) Discuss the effectiveness of the project.
(b) Report on any problems encountered when preparing the project.

EVIDENCE REQUIREMENTS FOR THIS UNIT

Written and/or oral and product evidence is required which demonstrates that the candidate has achieved all the Outcomes and Performance Criteria.

The assessment of this Unit is a combination of practical and knowledge based activities. It is anticipated that the assessment for this Unit will take the form of an integrated case study to prepare a report.

National Unit Specification: statement of standards (cont)

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The report will be a collection of the materials prepared including planning, development of the project; sketches, drawings and analysis and an evaluation of the project. The production of the report will be carried out in open-book conditions. Candidates will have access to all relevant resources to complete the report. Candidates can work in small teams and individually for associated computational work using shared data. Each candidate is free to co-operate with colleagues in the research of technical information and construction details. Candidates may also confer with one and other regarding design factors and concepts. Assessors must, however, satisfy themselves that the candidates produce their own work.

Outcomes 1, 2, and 3 will be assessed together based on the production of a report. Assessment can be based on the following tasks:

Planning	**Development**	**Evaluation**
Sources of information	Introduction	Effectiveness
Tasks required to be completed	Options	Problems
Time chart for completing tasks	Analysis	
	Drawings	
	References	
	Overall presentation	

National Unit Specification: support notes

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This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit has been developed as an optional Unit in the National Certificate in Civil Engineering and the Built Environment at SCQF level 6 and can also be taken as a freestanding Unit.

This Unit will involve the completion of a project based on a prepared brief. It is envisaged that candidates will be split into groups and each given a slight different brief. The brief should be clear and concise in order to give the candidate an indication of what is required. The brief will be based on the following Units:

F3J8 12 *Computer Aided Drawing in Construction*
F3JA 12 *Health and Safety in the Building industry*
F3JC 12 *Mechanics for Construction: An Introduction*
F3JB 12 *Introduction to Materials*
F3J7 12 *Civil Engineering Technology*
F3J9 12 *Construction Materials: Properties and Testing*
F3J6 12 *Civil Engineering Site Works*

It is recommended that the Unit be completed in the final semester of the Course in order that candidates have access to all the knowledge obtained in the core Units. Each brief should include a specification and drawings for a simple Civil Engineering project, such as a building or a bridge. The brief should also contain a list of areas to be investigated and reported on such as:

- methods of evaluating ground conditions
- basic designs for foundations/structures
- equipment requirements
- material requirements
- health and safety requirements
- drawings of structural details
- draft layouts for reports.

Some of the work incorporated in this Unit could form part of the assessment required for other core Units in the Course. Each candidate should produce a main development report about 3000–5000 words in length, containing the planning and evaluation sections as appendices or attachments.

To ensure reliability and credibility, all assessment work should be carried out under controlled conditions. This means that the assessor must closely monitor the progress of each candidate's work to ensure that the evidence submitted is the candidate's own work.

National Unit Specification: support notes (cont)

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GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Tutors/lecturers will be expected to produce one or more detailed briefs for the project, which will be issued to each candidate or group of candidates at the start of the Unit. It is expected that candidates will complete most of the work required for this Unit in their own time. However during the initial stages of the Unit, time should be spent on giving the candidates guidance on how to plan their project, where to find the information required and methods of presenting the material. In order that drawings and reports can be prepared by the candidates, time should also be allocated to the supervised use of computer facilities. It is also important that all candidates have regular contact with assessors throughout the Unit in order that progress can be monitored effectively.

Each candidate should initially prepare a plan of the tasks required and the time scale required to complete the tasks based the issued brief. It would also be useful if each candidate kept a diary of proposed work and work carried out in order that they can plan their work effectively.

The candidates will then have to analyse the various options available and to prepare a case for the option chosen. Following this the candidates will next need to gather information, analyse the preferred option, design and produce drawings of the preferred option.

Finally all the material should be gathered together and presented in the form of a report. The layout of the report could take the following format:

1	Title	8	Options
2	Summary	9	Analysis
3	Acknowledgements	10	Drawings
4	Contents	11	Conclusion
5	List of drawings	12	Evaluation
6	Introduction	13	Bibliography
7	Planning	14	Appendices

Planning and evaluation could be included at the back of the report as an appendix or as an attachment.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit candidates will be:

- developing a report which will include critical thinking, planning, organising, reviewing and evaluating
- dealing with complex numerical and graphic concepts in order to identify, interpret and present relevant portfolio data
- analyse and summarise complex technical information effectively as part of a formal written report

These offer opportunities to develop aspects of the Core Skills of:

- *Numeracy*
- *Problem Solving*
- *Communication*
- *IT*

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005).*

This Unit will be assessed as an integrated case study based on the production of a report following the guidelines of a prepared brief.

Candidates will be required to satisfy all the conditions laid down in the statement of Evidence Requirements.

Planning	**Development**	**Evaluation**
Sources of information	Introduction	Effectiveness
Tasks required to be completed	Options	Problems
Time chart for completing tasks	Analysis	
	Drawings	
	References	
	Overall presentation	

Within each heading a marking schedule should be prepared for each sub task described in the Evidence Requirements section of this Unit. It is anticipated that an overall cut off score should be achieved in order to pass the Unit.

Marking should be carried out by the relevant assessor and checked by an appropriate colleague.

The Assessment Support Pack for this Unit provides appropriate sample assessment materials and will show a typical marking scheme. Where centres wish to develop their own assessment materials they should refer to the Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes (cont)

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CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* **(www.sqa.org.uk)**.